

UCHAIN minus GW Rn.TXT

A-1	³	DCF's for external ground radiation, (mrem/yr)/(pCi/g)	3	3	3
A-1	³	At-218 (Source: FGR 12)	³ 5.847E-03	³ 5.847E-03	³ DCF1(1)
A-1	³	Bi-210 (Source: FGR 12)	³ 3.606E-03	³ 3.606E-03	³ DCF1(2)
A-1	³	Bi-214 (Source: FGR 12)	³ 9.808E+00	³ 9.808E+00	³ DCF1(3)
A-1	³	Pa-234 (Source: FGR 12)	³ 1.155E+01	³ 1.155E+01	³ DCF1(4)
A-1	³	Pa-234m (Source: FGR 12)	³ 8.967E-02	³ 8.967E-02	³ DCF1(5)
A-1	³	Pb-210 (Source: FGR 12)	³ 2.447E-03	³ 2.447E-03	³ DCF1(6)
A-1	³	Pb-214 (Source: FGR 12)	³ 1.341E+00	³ 1.341E+00	³ DCF1(7)
A-1	³	Po-210 (Source: FGR 12)	³ 5.231E-05	³ 5.231E-05	³ DCF1(8)
A-1	³	Po-214 (Source: FGR 12)	³ 5.138E-04	³ 5.138E-04	³ DCF1(9)
A-1	³	Po-218 (Source: FGR 12)	³ 5.642E-05	³ 5.642E-05	³ DCF1(10)
A-1	³	Ra-226 (Source: FGR 12)	³ 3.176E-02	³ 3.176E-02	³ DCF1(11)
A-1	³	Rn-222 (Source: FGR 12)	³ 2.354E-03	³ 2.354E-03	³ DCF1(12)
A-1	³	Th-230 (Source: FGR 12)	³ 1.209E-03	³ 1.209E-03	³ DCF1(13)
A-1	³	Th-234 (Source: FGR 12)	³ 2.410E-02	³ 2.410E-02	³ DCF1(14)
A-1	³	Tl-210 (Source: no data)	³ 0.000E+00	³ -2.000E+00	³ DCF1(15)
A-1	³	U-234 (Source: FGR 12)	³ 4.017E-04	³ 4.017E-04	³ DCF1(16)
A-1	³	U-238 (Source: FGR 12)	³ 1.031E-04	³ 1.031E-04	³ DCF1(17)

B-1	³ Dose conversion factors for inhalation, mrem/pCi:	3	3	3
B-1	³ Pb-210+D	³ 1.380E-02	³ 1.360E-02	³ DCF2(1)
B-1	³ Po-210	³ 9.400E-03	³ 9.400E-03	³ DCF2(2)
B-1	³ Ra-226+D	³ 8.594E-03	³ 8.580E-03	³ DCF2(3)
B-1	³ Th-230	³ 3.260E-01	³ 3.260E-01	³ DCF2(4)
B-1	³ U-234	³ 1.320E-01	³ 1.320E-01	³ DCF2(5)
B-1	³ U-238	³ 1.180E-01	³ 1.180E-01	³ DCF2(6)
B-1	³ U-238+D	³ 1.180E-01	³ 1.180E-01	³ DCF2(7)

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D-1	³ U-234	³ 2.830E-04	³ 2.830E-04	³ DCF3(5)
D-1	³ U-238	³ 2.550E-04	³ 2.550E-04	³ DCF3(6)
D-1	³ U-238+D	³ 2.687E-04	³ 2.550E-04	³ DCF3(7)

D-34 ³ Food transfer factors:

D-34 ³ Pb-210+D , plant/soil concentration ratio, dimensionless ³ 1.000E-02 ³ 1.000E-02 ³ RTF(1,1)

D-34 ³ Pb-210+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) ³ 8.000E-04 ³ 8.000E-04 ³ RTF(1,2)

D-34 ³ Pb-210+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) ³ 3.000E-04 ³ 3.000E-04 ³ RTF(1,3)

D-34 ³ Po-210 , plant/soil concentration ratio, dimensionless ³ 1.000E-03 ³ 1.000E-03 ³ RTF(2,1)

D-34 ³ Po-210 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) ³ 5.000E-03 ³ 5.000E-03 ³ RTF(2,2)

D-34 ³ Po-210 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) ³ 3.400E-04 ³ 3.400E-04 ³ RTF(2,3)

D-34 ³ Ra-226+D₁, plant/soil concentration ratio, dimensionless ³ 4.000E-02 ³ 4.000E-02 ³ RTF(3,1)

D-34 ³ Ra-226+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) ³ 1.000E-03 ³ 1.000E-03 ³ RTF(3,2)

D-34 ³ Ra-226+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d) ³ 1.000E-03 ³ 1.000E-03 ³ RTF(3,3)

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Dose Conversion Factor (and Related) Parameter Summary (continued)

Dose Library: FGR 11

D-34 ³ Th-230 , plant/soil concentration ratio, dimensionless ³ 1.000E-03 ³ 1.000E-03 ³ RTF(4,1)

D-34 ³ Th-230 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) ³ 1.000E-04 ³ 1.000E-04 ³ RTF(4,2)

D-34 ³ Th-230 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) ³ 5.000E-06 ³ 5.000E-06 ³ RTF(4,3)

D-34 ³ U-234 , plant/soil concentration ratio, dimensionless ³ 2.500E-03 ³ 2.500E-03 ³ RTF(5,1)

D-34³ U-234 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d) ³ 3.400E-04 ³ 3.400E-04 ³ RTF(5,2)

D-34 ³ U-234 , milk/livestock-intake ratio, (pCi/L)/(pCi/d) ³ 6.000E-04 ³ 6.000E-04 ³ RTF(5,3)

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D-34 ³	3	3	3	
D-34 ³ U-238 , plant/soil concentration ratio, dimensionless	³ 2.500E-03	³ 2.500E-03	³ RTF(6,1)	
D-34 ³ U-238 , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	³ 3.400E-04	³ 3.400E-04	³ RTF(6,2)	
D-34 ³ U-238 , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	³ 6.000E-04	³ 6.000E-04	³ RTF(6,3)	
D-34 ³	3	3	3	
D-34 ³ U-238+D , plant/soil concentration ratio, dimensionless	³ 2.500E-03	³ 2.500E-03	³ RTF(7,1)	
D-34 ³ U-238+D , beef/livestock-intake ratio, (pCi/kg)/(pCi/d)	³ 3.400E-04	³ 3.400E-04	³ RTF(7,2)	
D-34 ³ U-238+D , milk/livestock-intake ratio, (pCi/L)/(pCi/d)	³ 6.000E-04	³ 6.000E-04	³ RTF(7,3)	
D-5 ³ Bioaccumulation factors, fresh water, L/kg:	3	3	3	
D-5 ³ Pb-210+D , fish	³ 3.000E+02	³ 3.000E+02	³ BIOFAC(1,1)	
D-5 ³ Pb-210+D , crustacea and mollusks	³ 1.000E+02	³ 1.000E+02	³ BIOFAC(1,2)	
D-5 ³	3	3	3	
D-5 ³ Po-210 , fish	³ 1.000E+02	³ 1.000E+02	³ BIOFAC(2,1)	
D-5 ³ Po-210 , crustacea and mollusks	³ 2.000E+04	³ 2.000E+04	³ BIOFAC(2,2)	
D-5 ³	3	3	3	
D-5 ³ Ra-226+D , fish	³ 5.000E+01	³ 5.000E+01	³ BIOFAC(3,1)	
D-5 ³ Ra-226+D , crustacea and mollusks	³ 2.500E+02	³ 2.500E+02	³ BIOFAC(3,2)	
D-5 ³	3	3	3	
D-5 ³ Th-230 , fish	³ 1.000E+02	³ 1.000E+02	³ BIOFAC(4,1)	
D-5 ³ Th-230 , crustacea and mollusks	³ 5.000E+02	³ 5.000E+02	³ BIOFAC(4,2)	
D-5 ³	3	3	3	
D-5 ³ U-234 , fish	³ 1.000E+01	³ 1.000E+01	³ BIOFAC(5,1)	
D-5 ³ U-234 , crustacea and mollusks	³ 6.000E+01	³ 6.000E+01	³ BIOFAC(5,2)	
D-5 ³	3	3	3	
D-5 ³ U-238 , fish	³ 1.000E+01	³ 1.000E+01	³ BIOFAC(6,1)	
D-5 ³ U-238 , crustacea and mollusks	³ 6.000E+01	³ 6.000E+01	³ BIOFAC(6,2)	
D-5 ³	3	3	3	
D-5 ³ U-238+D , fish	³ 1.000E+01	³ 1.000E+01	³ BIOFAC(7,1)	
D-5 ³ U-238+D , crustacea and mollusks	³ 6.000E+01	³ 6.000E+01	³ BIOFAC(7,2)	

#For DCF1(xxx) only, factors are for infinite depth & area. See EFG table in Ground Pathway of Detailed Report.

*Base Case means Default.Lib w/o Associate Nuclide contributions.

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Site-Specific Parameter Summary

R011³ Area of contaminated zone (m**2) ³ 1.000E+04 ³ 1.000E+04 ³ --- ³ AREA

R011³ Thickness of contaminated zone (m) ³ 2.000E+00 ³ 2.000E+00 ³ --- ³ THICK0

R011³ Length parallel to aquifer flow (m) ³ 1.000E+02 ³ 1.000E+02 ³ --- ³ LCZPA

R011³ Basic radiation dose limit (mrem/yr) ³ 2.500E+01 ³ 3.000E+01 ³ --- ³ BRD

R011³ Time since placement of material (yr) ³ 0.000E+00 ³ 0.000E+00 ³ --- ³ TI

R011³ Times for calculations (yr) ³ 1.000E+01 ³ 1.000E+01 ³ --- ³ T(4)
 R011³ Times for calculations (yr) ³ 1.000E+01 ³ 1.000E+01 ³ --- ³ T(5)

R011.3 Times for calculations (yr) $3.0000E+01$ $3.0000E+01$ --- $3.1(5)$

R011.3 Times for calculations (yr) $3.1000E+02$ $1.0000E+02$ --- $3.1(6)$
 R011.3 Times for calculations (yr) $3.2000E+02$ $3.0000E+02$ --- $3.1(7)$

R011 = Times for calculations (yr)
 R011.3 Times for calculations (yr)

R011³ Times for calculations (yr) 1.00E+03 1.00E+03 1(8)
 R011³ Times for calculations (yr) 1.00E+03 1.00E+03 1(8)

R011 Times for calculations (yr)
R011³ Times for calculations (yr)

RTT Times for calculations (γ_1) not used 0.000E+00 222 1(16)

R012 ³ Initial principal radionuclide (pCi/g): Pb-210 ³ 1.000E+00 ³ 0.000E+00 ³

R012 Initial principal radionuclide ($\mu\text{Ci/g}$): Po-210 1.000E+00 0.000E+00
 R012³ Initial principal radionuclide ($\mu\text{Ci/g}$): Po-210 ³1.000E+00 ³0.000E+00 ³
 --- ³SIC(2)

R012³ Initial principal radionuclide (pCi/g): Ra-226 1.000E+00 0.000E+00 ---

R012³ Initial principal radionuclide (pCi/g): Th-230³ 1.000E+00³ 0.000E+00³ ---³ S1(4)

R012³ Initial principal radionuclide (pCi/g): U-234 ³ 1.000E+00 ³ 0.000E+00 ³ --- ³ S1(5)

R012 ³ Initial principal radionuclide (pCi/g): U-238 ³ 1.000E+00 ³ 0.000E+00 ³ --- ³ S1(6)

R012 ³ Concentration in groundwater (pCi/L): Pb-210 ³ not used ³ 0.000E+00 ³ --- ³ W1(

R012 ³ Concentration in groundwater (pCi/L): Po-210 ³ not used ³ 0.000E+00 ³ --- ³ WL

R012 ³ Concentration in groundwater (pCi/L): Ra-226 ³ not used ³ 0.000E+00 ³ --- ³ W1(

R012 ³ Concentration in groundwater (pCi/L): Th-230 ³ not used ³ 0.000E+000 ³ --- ³ W1(

R012 ³ Concentration in groundwater (pCi/L): U-234 ³ not used ³ 0.000E+00 ³ --- ³ W1(

R012 ³ Concentration in groundwater (pCi/L): U-238 ³ not used ³ 0.000E+00 ³ --- ³ W1(

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R013	³ Cover depth (m)	³ 0.000E+00	³ 0.000E+00	³ ---	³ COVER0
R013	³ Density of cover material (g/cm**3)	³ not used	³ 1.500E+00	³ ---	³ DENSCV
R013	³ Cover depth erosion rate (m/yr)	³ not used	³ 1.000E-03	³ ---	³ VCV
R013	³ Density of contaminated zone (g/cm**3)	³ 1.500E+00	³ 1.500E+00	³ ---	³ DENSCZ
R013	³ Contaminated zone erosion rate (m/yr)	³ 1.000E-03	³ 1.000E-03	³ ---	³ VCZ
R013	³ Contaminated zone total porosity	³ 4.000E-01	³ 4.000E-01	³ ---	³ TPCZ
R013	³ Contaminated zone field capacity	³ 2.000E-01	³ 2.000E-01	³ ---	³ FCCZ
R013	³ Contaminated zone hydraulic conductivity (m/yr)	³ 1.000E+01	³ 1.000E+01	³ ---	³ HCCZ
R013	³ Contaminated zone b parameter	³ 5.300E+00	³ 5.300E+00	³ ---	³ BCZ
R013	³ Average annual wind speed (m/sec)	³ 2.000E+00	³ 2.000E+00	³ ---	³ WIND
R013	³ Humidity in air (g/m**3)	³ not used	³ 8.000E+00	³ ---	³ HUMID
R013	³ Evapotranspiration coefficient	³ 5.000E-01	³ 5.000E-01	³ ---	³ EVAPTR
R013	³ Precipitation (m/yr)	³ 1.000E+00	³ 1.000E+00	³ ---	³ PRECIP
R013	³ Irrigation (m/yr)	³ 2.000E-01	³ 2.000E-01	³ ---	³ RI
R013	³ Irrigation mode	³ overhead	³ overhead	³ ---	³ IDITCH
R013	³ Runoff coefficient	³ 2.000E-01	³ 2.000E-01	³ ---	³ RUNOFF
R013	³ Watershed area for nearby stream or pond (m**2)	³ 1.000E+06	³ 1.000E+06	³ ---	³ WAREA
R013	³ Accuracy for water/soil computations	³ 1.000E-03	³ 1.000E-03	³ ---	³ EPS

R014 ³ Density of saturated zone (g/cm***3) ³ 1.500E+00 ³ 1.500E+00 ³ --- ³ DENSAQ
 R014 ³ Saturated zone total porosity ³ 4.000E-01 ³ 4.000E-01 ³ --- ³ TPSZ
 R014 ³ Saturated zone effective porosity ³ 2.000E-01 ³ 2.000E-01 ³ --- ³ EPSZ

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Site-Specific Parameter Summary (continued)

R014 ³ Saturated zone field capacity ³ 2.000E-01 ³ 2.000E-01 ³ --- ³ FCSZ

R014³ Saturated zone hydraulic conductivity (m/yr) ³ 1.000E+02 ³ 1.000E+02 ³ --- ³ HCSZ

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R014 ³ Saturated zone hydraulic gradient	³ 2.000E-02	³ 2.000E-02	³	---	---	---	³ HGWT	
R014 ³ Saturated zone b parameter	³ 5.300E+00	³ 5.300E+00	³	---	---	---	³ BSZ	
R014 ³ Water table drop rate (m/yr)	³ 1.000E-03	³ 1.000E-03	³	---	---	---	³ VWT	
R014 ³ Well pump intake depth (m below water table)	³ 1.000E+01	³ 1.000E+01	³	---	---	---	³ DWIBWT	
R014 ³ Model: Nondispersion (ND) or Mass-Balance (MB)	³ ND	³ ND	³	---	---	---	³ MODEL	
R014 ³ Well pumping rate (m**3/yr)	³ 2.500E+02	³ 2.500E+02	³	---	---	---	³ UW	
3	3	3	3					
R015 ³ Number of unsaturated zone strata	³ 1	³ 1	³	---	---	---	³ NS	
R015 ³ Unsat. zone 1, thickness (m)	³ 4.000E+00	³ 4.000E+00	³	---	---	---	³ H(1)	
R015 ³ Unsat. zone 1, soil density (g/cm**3)	³ 1.500E+00	³ 1.500E+00	³	---	---	---	³ DENSUZ(1)	
R015 ³ Unsat. zone 1, total porosity	³ 4.000E-01	³ 4.000E-01	³	---	---	---	³ TPUZ(1)	
R015 ³ Unsat. zone 1, effective porosity	³ 2.000E-01	³ 2.000E-01	³	---	---	---	³ EPUZ(1)	
R015 ³ Unsat. zone 1, field capacity	³ 2.000E-01	³ 2.000E-01	³	---	---	---	³ FCUZ(1)	
R015 ³ Unsat. zone 1, soil-specific b parameter	³ 5.300E+00	³ 5.300E+00	³	---	---	---	³ BUZ(1)	
R015 ³ Unsat. zone 1, hydraulic conductivity (m/yr)	³ 1.000E+01	³ 1.000E+01	³	---	---	---	³ HCUZ(1)	
3	3	3	3					
R016 ³ Distribution coefficients for Pb-210	³	³	³	³	³	³		
R016 ³ Contaminated zone (cm**3/g)	³ 1.000E+02	³ 1.000E+02	³	---	---	---	³ DCNUCC(1)	
R016 ³ Unsaturated zone 1 (cm**3/g)	³ 1.000E+02	³ 1.000E+02	³	---	---	---	³ DCNUCU(1,1)	
R016 ³ Saturated zone (cm**3/g)	³ 1.000E+02	³ 1.000E+02	³	---	---	---	³ DCNUCS(1)	
R016 ³ Leach rate (/yr)	³ 0.000E+00	³ 0.000E+00	³	1.663E-03	1.663E-03	1.663E-03	³ ALEACH(1)	
R016 ³ Solubility constant	³ 0.000E+00	³ 0.000E+00	³	not used	not used	not used	³ SOLUBK(1)	
3	3	3	3					
R016 ³ Distribution coefficients for Po-210	³	³	³	³	³	³		
R016 ³ Contaminated zone (cm**3/g)	³ 1.000E+01	³ 1.000E+01	³	---	---	---	³ DCNUCC(2)	
R016 ³ Unsaturated zone 1 (cm**3/g)	³ 1.000E+01	³ 1.000E+01	³	---	---	---	³ DCNUCU(2,1)	
R016 ³ Saturated zone (cm**3/g)	³ 1.000E+01	³ 1.000E+01	³	---	---	---	³ DCNUCS(2)	
R016 ³ Leach rate (/yr)	³ 0.000E+00	³ 0.000E+00	³	1.632E-02	1.632E-02	1.632E-02	³ ALEACH(2)	
R016 ³ Solubility constant	³ 0.000E+00	³ 0.000E+00	³	not used	not used	not used	³ SOLUBK(2)	
3	3	3	3					
R016 ³ Distribution coefficients for Ra-226	³	³	³	³	³	³		
R016 ³ Contaminated zone (cm**3/g)	³ 7.000E+01	³ 7.000E+01	³	---	---	---	³ DCNUCC(3)	
R016 ³ Unsaturated zone 1 (cm**3/g)	³ 7.000E+01	³ 7.000E+01	³	---	---	---	³ DCNUCU(3,1)	
R016 ³ Saturated zone (cm**3/g)	³ 7.000E+01	³ 7.000E+01	³	---	---	---	³ DCNUCS(3)	
R016 ³ Leach rate (/yr)	³ 0.000E+00	³ 0.000E+00	³	2.374E-03	2.374E-03	2.374E-03	³ ALEACH(3)	

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R016	³	Solubility constant	³	0.000E+00	³	0.000E+00	³	not used	³	SOLUBK(3)
	³		³		³		³		³	
R016	³	Distribution coefficients for Th-230	³		³		³		³	
R016	³	Contaminated zone (cm**3/g)	³	6.000E+04	³	6.000E+04	³	---	³	DCNUCC(4)
R016	³	Unsaturated zone 1 (cm**3/g)	³	6.000E+04	³	6.000E+04	³	---	³	DCNUCU(4,1)
R016	³	Saturated zone (cm**3/g)	³	6.000E+04	³	6.000E+04	³	---	³	DCNUCS(4)
R016	³	Leach rate (/yr)	³	0.000E+00	³	0.000E+00	³	2.778E-06	³	ALEACH(4)
R016	³	Solubility constant	³	0.000E+00	³	0.000E+00	³	not used	³	SOLUBK(4)

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R016 ³ Distribution coefficients for U-234	3	3	3	3	
R016 ³ Contaminated zone (cm**3/g)		³ 5.000E+01	³ 5.000E+01	³ ---	³ DCNUCC(5)
R016 ³ Unsaturated zone 1 (cm**3/g)		³ 5.000E+01	³ 5.000E+01	³ ---	³ DCNUCU(5,1)
R016 ³ Saturated zone (cm**3/g)		³ 5.000E+01	³ 5.000E+01	³ ---	³ DCNUCS(5)
R016 ³ Leach rate (/yr)		³ 0.000E+00	³ 0.000E+00	³ 3.319E-03	³ ALEACH(5)
R016 ³ Solubility constant		³ 0.000E+00	³ 0.000E+00	³ not used	³ SOLUBK(5)

R016 ³ Distribution coefficients for U-238	3	3	3	3	
R016 ³ Contaminated zone (cm**3/g)	³ 5.000E+01	³ 5.000E+01	³	---	³ DCNUCC(6)
R016 ³ Unsaturated zone 1 (cm**3/g)	³ 5.000E+01	³ 5.000E+01	³	---	³ DCNUCU(6,1)
R016 ³ Saturated zone (cm**3/g)	³ 5.000E+01	³ 5.000E+01	³	---	³ DCNUCS(6)
R016 ³ Leach rate (/yr)	³ 0.000E+00	³ 0.000E+00	³	3.319E-03	³ ALEACH(6)
R016 ³ Solubility constant	³ 0.000E+00	³ 0.000E+00	³	not used	³ SOLUBK(6)

R017³ Inhalation rate (m**3/yr) ³ 8.400E+03 ³ 8.400E+03 ³ --- ³ INHALR
 R017³ Mass loading for inhalation (g/m**3) ³ 1.000E-04 ³ 1.000E-04 ³ --- ³ MLINH
 R017³ Exposure duration ³ 3.000E+01 ³ 3.000E+01 ³ --- ³ ED

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R017 ³ Shielding factor, inhalation	³ 4.000E-01	³ 4.000E-01	³	---	³ SHF3
R017 ³ Shielding factor, external gamma	³ 7.000E-01	³ 7.000E-01	³	---	³ SHF1
R017 ³ Fraction of time spent indoors	³ 5.000E-01	³ 5.000E-01	³	---	³ FIND
R017 ³ Fraction of time spent outdoors (on site)	³ 2.500E-01	³ 2.500E-01	³	---	³ FOTD
R017 ³ Shape factor flag, external gamma	³ 1.000E+00	³ 1.000E+00	³	>0 shows circular AREA.	³ FS
R017 ³ Radii of shape factor array (used if FS = -1):	³	³	³	³	
R017 ³ Outer annular radius (m), ring 1:	³ not used	³ 5.000E+01	³	---	³ RAD_SHAPE(1)
R017 ³ Outer annular radius (m), ring 2:	³ not used	³ 7.071E+01	³	---	³ RAD_SHAPE(2)
R017 ³ Outer annular radius (m), ring 3:	³ not used	³ 0.000E+00	³	---	³ RAD_SHAPE(3)
R017 ³ Outer annular radius (m), ring 4:	³ not used	³ 0.000E+00	³	---	³ RAD_SHAPE(4)
R017 ³ Outer annular radius (m), ring 5:	³ not used	³ 0.000E+00	³	---	³ RAD_SHAPE(5)
R017 ³ Outer annular radius (m), ring 6:	³ not used	³ 0.000E+00	³	---	³ RAD_SHAPE(6)
R017 ³ Outer annular radius (m), ring 7:	³ not used	³ 0.000E+00	³	---	³ RAD_SHAPE(7)
R017 ³ Outer annular radius (m), ring 8:	³ not used	³ 0.000E+00	³	---	³ RAD_SHAPE(8)
R017 ³ Outer annular radius (m), ring 9:	³ not used	³ 0.000E+00	³	---	³ RAD_SHAPE(9)
R017 ³ Outer annular radius (m), ring 10:	³ not used	³ 0.000E+00	³	---	³ RAD_SHAPE(10)
R017 ³ Outer annular radius (m), ring 11:	³ not used	³ 0.000E+00	³	---	³ RAD_SHAPE(11)
R017 ³ Outer annular radius (m), ring 12:	³ not used	³ 0.000E+00	³	---	³ RAD_SHAPE(12)
R017 ³ Fractions of annular areas within AREA:	³	³	³	³	
R017 ³ Ring 1	³ not used	³ 1.000E+00	³	---	³ FRACA(1)
R017 ³ Ring 2	³ not used	³ 2.732E-01	³	---	³ FRACA(2)
R017 ³ Ring 3	³ not used	³ 0.000E+00	³	---	³ FRACA(3)
R017 ³ Ring 4	³ not used	³ 0.000E+00	³	---	³ FRACA(4)
R017 ³ Ring 5	³ not used	³ 0.000E+00	³	---	³ FRACA(5)
R017 ³ Ring 6	³ not used	³ 0.000E+00	³	---	³ FRACA(6)
R017 ³ Ring 7	³ not used	³ 0.000E+00	³	---	³ FRACA(7)
R017 ³ Ring 8	³ not used	³ 0.000E+00	³	---	³ FRACA(8)
R017 ³ Ring 9	³ not used	³ 0.000E+00	³	---	³ FRACA(9)
R017 ³ Ring 10	³ not used	³ 0.000E+00	³	---	³ FRACA(10)
R017 ³ Ring 11	³ not used	³ 0.000E+00	³	---	³ FRACA(11)
R017 ³ Ring 12	³ not used	³ 0.000E+00	³	---	³ FRACA(12)

UCHAIN minus GW Rn.TXT

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\NONNUC_UCHAIN.RAD

Site-Specific Parameter Summary (continued)

0 Menu ³	³ User Parameter	³ Used by RESRAD ³ Input	³ Default ³ (If different from user input)	³ Parameter ³ Name
R018	Fruits, vegetables and grain consumption (kg/yr)	³ 1.600E+02	³ 1.600E+02	³ DIET(1)
R018	Leafy vegetable consumption (kg/yr)	³ 1.400E+01	³ 1.400E+01	³ DIET(2)
R018	Milk consumption (L/yr)	³ 9.200E+01	³ 9.200E+01	³ DIET(3)
R018	Meat and poultry consumption (kg/yr)	³ 6.300E+01	³ 6.300E+01	³ DIET(4)
R018	Fish consumption (kg/yr)	³ 5.400E+00	³ 5.400E+00	³ DIET(5)
R018	Other seafood consumption (kg/yr)	³ 9.000E-01	³ 9.000E-01	³ DIET(6)
R018	Soil ingestion rate (g/yr)	³ 3.650E+01	³ 3.650E+01	³ SOIL
R018	Drinking water intake (L/yr)	³ not used	³ 5.100E+02	³ DWI
R018	Contamination fraction of drinking water	³ not used	³ 1.000E+00	³ FDW
R018	Contamination fraction of household water	³ not used	³ 1.000E+00	³ FHHW
R018	Contamination fraction of livestock water	³ 0.000E+00	³ 1.000E+00	³ FLW
R018	Contamination fraction of irrigation water	³ 0.000E+00	³ 1.000E+00	³ FIRW
R018	Contamination fraction of aquatic food	³ 5.000E-01	³ 5.000E-01	³ FR9
R018	Contamination fraction of plant food	³ -1	³ -1	³ FPLANT
R018	Contamination fraction of meat	³ -1	³ -1	³ FMEAT
R018	Contamination fraction of milk	³ -1	³ -1	³ FMILK
R019	Livestock fodder intake for meat (kg/day)	³ 6.800E+01	³ 6.800E+01	³ LFI5
R019	Livestock fodder intake for milk (kg/day)	³ 5.500E+01	³ 5.500E+01	³ LFI6
R019	Livestock water intake for meat (L/day)	³ 5.000E+01	³ 5.000E+01	³ LWI5
R019	Livestock water intake for milk (L/day)	³ 1.600E+02	³ 1.600E+02	³ LWI6
R019	Livestock soil intake (kg/day)	³ 5.000E-01	³ 5.000E-01	³ LSI
R019	Mass loading for foliar deposition (g/m**3)	³ 1.000E-04	³ 1.000E-04	³ MLFD
R019	Depth of soil mixing layer (m)	³ 1.500E-01	³ 1.500E-01	³ DM
R019	Depth of roots (m)	³ 9.000E-01	³ 9.000E-01	³ DROOT
R019	Drinking water fraction from ground water	³ not used	³ 1.000E+00	³ FGWDW
R019	Household water fraction from ground water	³ not used	³ 1.000E+00	³ FGWHH

UCHAIN minus GW Rn.TXT

C14 3 C-12 concentration in water (g/cm **3) 3 not used 3 2.000E-05 3 --- 3 C12WTR
 C14 3 C-12 concentration in contaminated soil (g/g) 3 not used 3 3.000E-02 3 --- 3 C12CZ
 C14 3 Fraction of vegetation carbon from soil 3 not used 3 2.000E-02 3 --- 3 CSOIL

BESBAD, Version 6.4 Ts Limit = 30 days 05/06/2009 09:11 Page 8

Summary : Template File for Nuclide Independent Parameters

File : C:\RESRAD FAMILY\RESRAD\USERFILES\NONNUC UCHAIN.RAD

Site-Specific Parameter Summary (continued)

C14³ Fraction of vegetation carbon from air ³ not used ³ 9.800E-01 ³ --- ³ CAIR
 C14³ C-14 evasion layer thickness in soil (m) ³ not used ³ 3.000E-01 ³ --- ³ DPMC

UCHAIN minus GW Rn.TXT						
C14	³ C-14 evasion flux rate from soil (1/sec)	³ not used	³ 7.000E-07	³	---	³ EVSN
C14	³ C-12 evasion flux rate from soil (1/sec)	³ not used	³ 1.000E-10	³	---	³ REVSN
C14	³ Fraction of grain in beef cattle feed	³ not used	³ 8.000E-01	³	---	³ AVFG4
C14	³ Fraction of grain in milk cow feed	³ not used	³ 2.000E-01	³	---	³ AVFG5
3	3	3	3	3	3	
STOR	³ Storage times of contaminated foodstuffs (days):	³	³	³	³	³
STOR	³ Fruits, non-leafy vegetables, and grain	³ 1.400E+01	³ 1.400E+01	³	---	³ STOR_T(1)
STOR	³ Leafy vegetables	³ 1.000E+00	³ 1.000E+00	³	---	³ STOR_T(2)
STOR	³ Milk	³ 1.000E+00	³ 1.000E+00	³	---	³ STOR_T(3)
STOR	³ Meat and poultry	³ 2.000E+01	³ 2.000E+01	³	---	³ STOR_T(4)
STOR	³ Fish	³ 7.000E+00	³ 7.000E+00	³	---	³ STOR_T(5)
STOR	³ Crustacea and mollusks	³ 7.000E+00	³ 7.000E+00	³	---	³ STOR_T(6)
STOR	³ Well water	³ 1.000E+00	³ 1.000E+00	³	---	³ STOR_T(7)
STOR	³ Surface water	³ 1.000E+00	³ 1.000E+00	³	---	³ STOR_T(8)
STOR	³ Livestock fodder	³ 4.500E+01	³ 4.500E+01	³	---	³ STOR_T(9)
3	3	3	3	3	3	
R021	³ Thickness of building foundation (m)	³ not used	³ 1.500E-01	³	---	³ FLOOR1
R021	³ Bulk density of building foundation (g/cm**3)	³ not used	³ 2.400E+00	³	---	³ DENSFL
R021	³ Total porosity of the cover material	³ not used	³ 4.000E-01	³	---	³ TPCV
R021	³ Total porosity of the building foundation	³ not used	³ 1.000E-01	³	---	³ TPFL
R021	³ Volumetric water content of the cover material	³ not used	³ 5.000E-02	³	---	³ PH2OCV
R021	³ Volumetric water content of the foundation	³ not used	³ 3.000E-02	³	---	³ PH2OFL
R021	³ Diffusion coefficient for radon gas (m/sec):	³	³	³	³	
R021	³ in cover material	³ not used	³ 2.000E-06	³	---	³ DIFCV
R021	³ in foundation material	³ not used	³ 3.000E-07	³	---	³ DIFFL
R021	³ in contaminated zone soil	³ not used	³ 2.000E-06	³	---	³ DIFCZ
R021	³ Radon vertical dimension of mixing (m)	³ not used	³ 2.000E+00	³	---	³ HMIX
R021	³ Average building air exchange rate (1/hr)	³ not used	³ 5.000E-01	³	---	³ REXG
R021	³ Height of the building (room) (m)	³ not used	³ 2.500E+00	³	---	³ HRM
R021	³ Building interior area factor	³ not used	³ 0.000E+00	³	---	³ FAI
R021	³ Building depth below ground surface (m)	³ not used	³ -1.000E+00	³	---	³ DMFL
R021	³ Emanating power of Rn-222 gas	³ not used	³ 2.500E-01	³	---	³ EMANA(1)
R021	³ Emanating power of Rn-220 gas	³ not used	³ 1.500E-01	³	---	³ EMANA(2)
3	3	3	3	3	3	
TITL	³ Number of graphical time points	³	³ 32	³	---	³ NPTS

UCHAIN minus GW Rn.TXT

TITL³ Maximum number of integration points for dose 3 17 3 --- 3 --- 3 LYMAX

1RESRAD, Version 6.4 T₉₀ Limit = 30 days 05/06/2009 09:11 Page 9

Summary : Template File for Nuclide Independent Parameters

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\NONNUC_UCHAIN.RAD

Summary of Pathway Selections

Pathway ³ User Selection

1 -- external gamma ³ active

2 -- inhalation (w/o radon)³

3 -- plant ingestion ³ active

4 -- meat ingestion 3 active

5 -- milk ingestion 3 active

6 -- aquatic foods 3 active

7 -- drinking water 3 suppose

8 -- soil ingestion ³ active

Find peak pathway doses suppressed

1RESRAD, Version 6.4 T_{LL} Limit = 30 days 05/06/2009 09:11 Page 10

Summary : Template File for Nuclide Independent Parameters

File : C:\RESRAD FAMILY\RESRAD\USERFILES\NONNUC UCHAIN.RAD

Contaminated Zone Dimensions

Initial Soil Concentrations, pCi/g

Area: 10000.00 square meters

Pb-210 1.000E+00

Thickness: 2.00 meters

Po-210 1.000E+00

Cover Depth: 0.00 meters

Ra-226 1.000E+00

Th-230 1.000E+00

UCHAIN minus GW Rn.TXT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 0.000E+00 years

0*Sum of all water independent and dependent pathways.

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Summary : Template File for Nuclide Independent Parameters

File : C:\RESRAD FAMILY\RESRAD\USERFILES\NONNUC UCHAIN.RAD

UCHAIN minus GW Rn.TXT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Independent Pathways (Inhalation excludes radon)

Nuclide mrem/yr fract.
Äääääää Äääääääää Äääääää Äääääääää Äääääääää Äääääääää Äääääääää Äääääääää Äääääääää Äääääääää Äääääääää
Äääääääää Äääääää Äääääääää Äääääää Äääääääää Äääääääää Äääääääää Äääääääää Äääääääää Äääääääää

Pb-210 3.345E-03 0.0002 1.375E-03 0.0001 0.000E+00 0.0000 4.690E+00 0.2738 3.251E-01 0.0190 9.173E-02 0.0054

1.863E-01 0.0109

Po-210 2.123E-06 0.0000 4.334E-05 0.0000 0.000E+00 0.0000 1.194E-02 0.0007 1.227E-02 0.0007 1.189E-03 0.0001 3.747E-03
0.0002

Ra-226 6.286E+00 0.3669 6.058E-04 0.0000 0.000E+00 0.0000 4.815E+00 0.2810 1.487E-01 0.0087 1.681E-01 0.0098
 4.425E-02 0.0026

Th-230 4.789E-03 0.0003 2.086E-02 0.0012 0.000E+00 0.0000 5.073E-02 0.0030 1.064E-03 0.0001 1.709E-04 0.0000 1.503E-02
0.0009

U-234 2.313E-04 0.0000 8.406E-03 0.0005 0.000E+00 0.0000 6.128E-02 0.0036 2.022E-03 0.0001 4.957E-03 0.0003 7.709E-03
0.0004

U-238 8.544E-02 0.0050 7.516E-03 0.0004 0.000E+00 0.0000 5.819E-02 0.0034 1.920E-03 0.0001 4.707E-03 0.0003 7.319E-03
0.0004

||||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| |||||

Total 6.380E+00 0.3724 3.881E-02 0.0023 0.000E+00 0.0000 9.687E+00 0.5654 4.911E-01 0.0287 2.709E-01 0.0158 2.644E-01
0.0154

0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+00 years

Water Dependent Pathways

Nuclide mrem/yr fract.
Äääääää Äääääääää Äääääää Äääääääää Äääääääää Äääääääää Äääääääää Äääääääää Äääääääää Äääääääää Äääääääää
Äääääääää Äääääää Äääääääää Äääääää Äääääääää Äääääääää Äääääääää Äääääääää Äääääääää Äääääääää

UCHAIN minus GW Rn.TXT

*Sum of all water independent and dependent pathways.

IRESRAD, Version 6.4 T₉₀ Limit = 30 days 05/06/2009 09:11 Page 13

Summary : Template File for Nuclide Independent Parameters

File : C:\RESRAD FAMILY\RESRAD\USERFILES\NONNUC UCHAIN.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

Nuclide mrem/yr fract.
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Pb-210 3.135E-03 0.0002 1.328E-03 0.0001 0.000E+00 0.0000 4.404E+00 0.2582 3.158E-01 0.0185 8.701E-02 0.0051

1.780E-01 0.0104

Po-210 5.293E-08 0.0000 1.080E-06 0.0000 0.000E+00 0.0000 2.975E-04 0.0000 3.058E-04 0.0000 2.965E-05 0.0000 9.342E-05 0.0000

Ra-226 6.251E+00 0.3665 6.868E-04 0.0000 0.000E+00 0.0000 5.070E+00 0.2972 1.680E-01 0.0098 1.727E-01 0.0101
 5.534E-02 0.0032

UCHAIN minus GW Rn.TXT

```

Th-230 1.022E-02 0.0006 2.086E-02 0.0012 0.000E+00 0.0000 5.501E-02 0.0032 1.201E-03 0.0001 3.186E-04 0.0000 1.507E-02
0.0009
U-234 2.299E-04 0.0000 8.350E-03 0.0005 0.000E+00 0.0000 6.088E-02 0.0036 2.009E-03 0.0001 4.924E-03 0.0003 7.658E-03
0.0004
U-238 8.488E-02 0.0050 7.467E-03 0.0004 0.000E+00 0.0000 5.780E-02 0.0034 1.907E-03 0.0001 4.676E-03 0.0003 7.271E-03
0.0004
Total 6.350E+00 0.3722 3.869E-02 0.0023 0.000E+00 0.0000 9.648E+00 0.5656 4.892E-01 0.0287 2.697E-01 0.0158 2.634E-01
0.0154
0

```

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p) As mrem/yr and Fraction of Total Dose At t = 3.000E+00 years

0*Sum of all water independent and dependent pathways.

UCHAIN minus GW Rn.TXT

1RESRAD, Version 6.4 T₉₀ Limit = 30 days 05/06/2009 09:11 Page 14

Summary : Template File for Nuclide Independent Parameters

File : C:\RESRAD FAMILY\RESRAD\USERFILES\NONNUC UCHAIN.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)
 As mrem/yr and Fraction of Total Dose At t = 1.000E+01 years

UCHAIN minus GW Rn.TXT

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.4 T₉₀ Limit = 30 days 05/06/2009 09:11 Page 15

Summary : Template File for Nuclide Independent Parameters

File : C:\RESRAD FAMILY\RESRAD\USERFILES\NONNUC_UCHAIN.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

Nuclide mrem/yr fract.
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Pb-210 1.295E-03 0.0001 5.488E-04 0.0009 0.0000E+00 0.0000 1.819E+00 0.1132 1.306E-01 0.0081 3.595E-02 0.0022

7.355E-02 0.0046

Po-210 1.200E-29 0.0000 2.450E-28 0.0000 0.000E+00 0.0000 6.747E-26 0.0000 6.935E-26 0.0000 6.723E-27 0.0000 2.118E-26

UCHAIN minus GW Rn.TXT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p) As mrem/yr and Fraction of Total Dose At t = 3.000E+01 years

UCHAIN minus GW Rn.TXT

Total 0.000E+00 0.0000 0.000E+00 0.0000 0.000E+00 0.0000 0.000E+00 0.0000 0.000E+00 0.0000 0.000E+00 0.0000
1.607E+01 1.0000

*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.4 T₉₀ Limit = 30 days 05/06/2009 09:11 Page 16

Summary : Template File for Nuclide Independent Parameters

File : C:\RESRAD FAMILY\RESRAD\USERFILES\NONNUC UCHAIN.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

0 Water Independent Pathways (Inhalation excludes radon)

0 Ground Inhalation Radon Plant Meat Milk Soil

Pb-210 1.308E-04 0.0000 5.545E-05 0.0000 0.000E+00 0.0000 1.838E-01 0.0134 1.319E-02 0.0010 3.633E-03 0.0003 7.431E-03
0.0005

Ra-226 4.764E+00 0.3477 1.516E-03 0.0001 0.000E+00 0.0000 7.153E+00 0.5221 3.642E-01 0.0266 1.966E-01 0.0144
 1.752E-01 0.0128

Th-230 2.401E-01 0.0175 2.090E-02 0.0015 0.000E+00 0.0000 3.515E-01 0.0257 1.528E-02 0.0011 8.846E-03 0.0006 2.154E-02
0.0016

U-234 2.685E-04 0.0000 6.066E-03 0.0004 0.000E+00 0.0000 4.426E-02 0.0032 1.462E-03 0.0001 3.571E-03 0.0003 5.562E-03
0.0004

U-238 6.151E-02 0.0045 5.413E-03 0.0004 0.000E+00 0.0000 4.190E-02 0.0031 1.383E-03 0.0001 3.390E-03 0.0002 5.271E-03
0.0004

Total 5.066E+00 0.3697 3.395E-02 0.0025 0.000E+00 0.0000 7.775E+00 0.5675 3.955E-01 0.0289 2.161E-01 0.0158 2.150E-01
0.0157

0.0157
0

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+02 years

Water Dependent Pathways

UCHAIN minus GW Rn.TXT

0*Sum of all water independent and dependent pathways.

1RESRAD Version 6.4 T₉₀ Limit = 30 days 05/06/2009 09:11 Page 17

Summary : Template File for Nuclide Independent Parameters

File : C:\RESRAD FAMILY\RESRAD\USER FILES\NONNUC_UCHAIN.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

Water Independent Pathways (Inhalation excludes radon)

UCHAIN minus GW Rn.TXT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 3.000E+02 years

UCHAIN minus GW Rn.TXT

U-238 0.000E+00 0.0000 5.492E-20 0.0000 0.000E+00 0.0000 0.000E+00 0.0000 0.000E+00 0.0000 0.000E+00 0.0000
 6.122E-02 0.0068
 Total 0.000E+00 0.0000 9.257E-15 0.0000 0.000E+00 0.0000 0.000E+00 0.0000 0.000E+00 0.0000 0.000E+00 0.0000.
 8.942E+00 1.0000

0*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.4 T_k Limit = 30 days 05/06/2009 09:11 Page 18

Summary : Template File for Nuclide Independent Parameters

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\NONNUC_UCHAIN.RAD

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

Nuclide	Water Independent Pathways (Inhalation excludes radon)											
	Ground	Inhalation	Radon	Plant	Meat	Milk	Soil					
Radio- U-238	0.000E+00	0.0000	5.492E-20	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Pb-210	2.077E-17	0.0000	8.804E-18	0.0000	0.000E+00	0.0000	2.918E-14	0.0000	2.095E-15	0.0000	5.767E-16	0.0000
Po-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
Ra-226	3.809E-01	0.0578	1.258E-04	0.0000	0.000E+00	0.0000	5.872E-01	0.0891	3.022E-02	0.0046	1.602E-02	0.0024
Th-230	9.091E-01	0.1380	2.090E-02	0.0032	0.000E+00	0.0000	1.381E+00	0.2096	6.821E-02	0.0104	3.695E-02	0.0056
U-234	2.130E-03	0.0003	3.590E-04	0.0001	0.000E+00	0.0000	5.435E-03	0.0008	2.313E-04	0.0000	2.653E-04	0.0000
U-238	3.103E-03	0.0005	2.738E-04	0.0000	0.000E+00	0.0000	2.121E-03	0.0003	7.002E-05	0.0000	1.714E-04	0.0000
Total	1.295E+00	0.1966	2.166E-02	0.0033	0.000E+00	0.0000	1.975E+00	0.2998	9.873E-02	0.0150	5.341E-02	0.0081
	0.0095											
	0											

UCHAIN minus GW Rn.TXT

Total Dose Contributions TDOSE(i,p,t) for Individual Radionuclides (i) and Pathways (p)

As mrem/yr and Fraction of Total Dose At t = 1.000E+03 years

	Water Dependent Pathways						All Pathways*	
	Water	Fish	Radon	Plant	Meat	Milk		
Radio- Nuclide	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	0.000E+00	
Pb-210	0.000E+00	0.0000	6.994E-14	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
	1.030E-13	0.0000						
Po-210	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000	0.000E+00	0.0000
	0.000E+00	0.0000						
Ra-226	0.000E+00	0.0000	2.739E+00	0.4157	0.000E+00	0.0000	0.000E+00	0.0000
	3.768E+00	0.5719						
Th-230	0.000E+00	0.0000	3.363E-01	0.0510	0.000E+00	0.0000	0.000E+00	0.0000
	2.799E+00	0.4249						
U-234	0.000E+00	0.0000	5.335E-03	0.0008	0.000E+00	0.0000	0.000E+00	0.0000
	1.415E-02	0.0021						
U-238	0.000E+00	0.0000	9.107E-04	0.0001	0.000E+00	0.0000	0.000E+00	0.0000
	6.917E-03	0.0010						
Total	0.000E+00	0.0000	3.081E+00	0.4677	0.000E+00	0.0000	0.000E+00	0.0000
	6.588E+00	1.0000						

*Sum of all water independent and dependent pathways.

1RESRAD, Version 6.4 T_c Limit = 30 days 05/06/2009 09:11 Page 19

Summary : Template File for Nuclide Independent Parameters

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\NONNUC_UCHAIN.RAD

Dose/Source Ratios Summed Over All Pathways

Parent and Progeny Principal Radionuclide Contributions Indicated

0	Parent	Product	Thread	DSR(j,t) At Time in Years (mrem/yr)/(pCi/g)						
(i)	(j)	Fraction	0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03
Ääääääääää	Ääääääääää	Ääääääääää	Ääääääääää	Ääääääääää	Ääääääääää	Ääääääääää	Ääääääääää	Ääääääääää	Ääääääääää	Ääääääääää
Ääääääääää	Ääääääääää	Ääääääääää	Ääääääääää	Ääääääääää	Ääääääääää	Ääääääääää	Ääääääääää	Ääääääääää	Ääääääääää	Ääääääääää

UCHAIN.minus GW Rn.TXT

Pb-210+D	Pb-210+D	1.000E+00	4.986E+00	4.825E+00	4.519E+00	3.593E+00	1.867E+00	1.886E-01	2.700E-04	3.177E-14
Pb-210+D	Po-210	1.000E+00	3.154E-01	4.730E-01	4.699E-01	3.742E-01	1.944E-01	1.964E-02	2.811E-05	7.123E-14
Pb-210+D	äDSR(j)		5.301E+00	5.298E+00	4.989E+00	3.968E+00	2.061E+00	2.083E-01	2.981E-04	1.030E-13
0Po-210	Po-210	1.000E+00	1.848E-01	2.919E-02	7.276E-04	1.780E-09	1.650E-25	0.000E+00	0.000E+00	0.000E+00
0Ra-226+D	Ra-226+D	1.000E+00	1.123E+01	1.120E+01	1.113E+01	1.092E+01	1.032E+01	8.481E+00	4.838E+00	6.855E-01
Ra-226+D	Pb-210+D	1.000E+00	9.292E-02	2.475E-01	5.356E-01	1.395E+00	2.908E+00	3.786E+00	2.271E+00	3.911E-01
Ra-226+D	Po-210	1.000E+00	4.588E-03	1.787E-02	4.744E-02	1.371E-01	2.951E-01	3.878E-01	2.328E-01	2.691E+00
Ra-226+D	äDSR(j)		1.133E+01	1.146E+01	1.172E+01	1.245E+01	1.352E+01	1.265E+01	7.341E+00	3.768E+00
0Th-230	Th-230	1.000E+00	8.534E-02	8.534E-02	8.534E-02	8.533E-02	8.531E-02	8.524E-02	8.504E-02	8.434E-02
Th-230	Ra-226+D	1.000E+00	2.361E-03	7.206E-03	1.688E-02	5.031E-02	1.423E-01	4.262E-01	9.868E-01	1.618E+00
Th-230	Pb-210+D	1.000E+00	1.462E-05	8.912E-05	4.299E-04	3.412E-03	2.288E-02	1.332E-01	3.939E-01	6.991E-01
Th-230	Po-210	1.000E+00	6.061E-07	5.341E-06	3.368E-05	3.192E-04	2.277E-03	1.355E-02	4.028E-02	3.974E-01
Th-230	äDSR(j)		8.772E-02	9.264E-02	1.027E-01	1.394E-01	2.528E-01	6.582E-01	1.506E+00	2.799E+00
0U-234	U-234	1.000E+00	8.489E-02	8.461E-02	8.405E-02	8.212E-02	7.684E-02	6.090E-02	3.134E-02	4.011E-03
U-234	Th-230	1.000E+00	4.048E-07	1.174E-06	2.698E-06	7.951E-06	2.230E-05	6.562E-05	1.457E-04	2.211E-04
U-234	Ra-226+D	1.000E+00	6.945E-09	4.987E-08	2.658E-07	2.360E-06	1.915E-05	1.807E-04	1.097E-03	3.786E-03
U-234	Pb-210+D	1.000E+00	3.497E-11	4.520E-10	4.735E-09	1.111E-07	2.224E-06	4.580E-05	4.040E-04	1.709E-03
U-234	Po-210	1.000E+00	1.272E-12	2.367E-11	3.355E-10	9.942E-09	2.177E-07	4.635E-06	4.125E-05	4.421E-03
U-234	äDSR(j)		8.489E-02	8.461E-02	8.405E-02	8.213E-02	7.688E-02	6.119E-02	3.302E-02	1.415E-02
0U-238	U-238	5.400E-05	4.119E-06	4.106E-06	4.078E-06	3.985E-06	3.729E-06	2.956E-06	1.522E-06	1.953E-07
0U-238+D	U-238+D	9.999E-01	1.656E-01	1.651E-01	1.640E-01	1.602E-01	1.499E-01	1.189E-01	6.119E-02	6.896E-03
U-238+D	U-234	9.999E-01	1.203E-07	3.597E-07	8.338E-07	2.444E-06	6.644E-06	1.735E-05	2.671E-05	1.139E-05
U-238+D	Th-230	9.999E-01	3.955E-13	2.635E-12	1.357E-11	1.181E-10	9.490E-10	8.834E-09	5.197E-08	1.658E-07
U-238+D	Ra-226+D	9.999E-01	4.844E-15	7.498E-14	8.858E-13	2.333E-11	5.462E-10	1.661E-08	2.812E-07	2.439E-06
U-238+D	Pb-210+D	9.999E-01	2.083E-17	5.523E-16	1.234E-14	8.479E-13	4.995E-11	3.550E-09	9.556E-08	1.152E-06
U-238+D	Po-210	9.999E-01	6.805E-19	2.602E-17	8.022E-16	7.276E-14	4.809E-12	3.574E-10	9.741E-09	5.429E-06
U-238+D	äDSR(j)		1.656E-01	1.651E-01	1.640E-01	1.602E-01	1.499E-01	1.189E-01	6.122E-02	6.916E-03

The DSR includes contributions from associated (half-life ó 30 days) daughters.

1RESRAD, Version 6.4 T< Limit = 30 days 05/06/2009 09:11 Page 20

Summary : Template File for Nuclide Independent Parameters

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\NONNUC_UCHAIN.RAD

Single Radionuclide Soil Guidelines G(i,t) in pCi/g

Basic Radiation Dose Limit = 2.500E+01 mrem/yr

UCHAIN minus GW Rn.TXT

0Nuclide

	(i) t= 0.000E+00	1.000E+00	3.000E+00	1.000E+01	3.000E+01	1.000E+02	3.000E+02	1.000E+03	
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Pb-210	4.716E+00	4.719E+00	5.011E+00	6.301E+00	1.213E+01	1.200E+02	8.387E+04	*7.634E+13	
Po-210	1.353E+02	8.566E+02	3.436E+04	1.405E+10	*4.494E+15	*4.494E+15	*4.494E+15	*4.494E+15	
Ra-226	2.207E+00	2.181E+00	2.134E+00	2.008E+00	1.848E+00	1.976E+00	3.405E+00	6.635E+00	
Th-230	2.850E+02	2.699E+02	2.435E+02	1.794E+02	9.891E+01	3.798E+01	1.660E+01	8.932E+00	
U-234	2.945E+02	2.955E+02	2.974E+02	3.044E+02	3.252E+02	4.086E+02	7.570E+02	1.767E+03	
U-238	1.509E+02	1.514E+02	1.524E+02	1.560E+02	1.667E+02	2.103E+02	4.083E+02	3.614E+03	
fffff fffff fffff fffff fffff fffff fffff fffff									

*At specific activity limit

0

Summed Dose/Source Ratios DSR(i,t) in (mrem/yr)/(pCi/g)
and Single Radionuclide Soil Guidelines G(i,t) in pCi/g

at tmin = time of minimum single radionuclide soil guideline

and at tmax = time of maximum total dose = 0.000E+00 years

0Nuclide Initial tmin DSR(i,tmin) G(i,tmin) DSR(i,tmax) G(i,tmax)

(i)	(pCi/g)	(years)	(pCi/g)	(pCi/g)	
ÄÄÄÄÄÄ ÄÄÄÄÄÄÄ ÄÄÄÄÄÄÄÄÄÄÄÄ ÄÄÄÄÄÄÄ ÄÄÄÄÄÄÄ ÄÄÄÄÄÄÄ ÄÄÄÄÄÄÄÄÄ ÄÄÄÄÄÄÄÄÄ					
Pb-210	1.000E+00	0.000E+00	5.301E+00	4.716E+00	5.301E+00 4.716E+00
Po-210	1.000E+00	0.000E+00	1.848E-01	1.353E+02	1.848E-01 1.353E+02
Ra-226	1.000E+00	45.58 ± 0.09	1.371E+01	1.824E+00	1.133E+01 2.207E+00
Th-230	1.000E+00	1.000E+03	2.799E+00	8.932E+00	8.772E-02 2.850E+02
U-234	1.000E+00	0.000E+00	8.489E-02	2.945E+02	8.489E-02 2.945E+02
U-238	1.000E+00	0.000E+00	1.656E-01	1.509E+02	1.656E-01 1.509E+02
fffff fffff fffff fffff fffff fffff fffff					

1RESRAD, Version 6.4 T_c Limit = 30 days 05/06/2009 09:11 Page 21

Summary : Template File for Nuclide Independent Parameters

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\NONNUC_UCHAIN.RAD

Individual Nuclide Dose Summed Over All Pathways

Parent Nuclide and Branch Fraction Indicated

0Nuclide Parent THF(i)

DOSE(j,t), mrem/yr

Page 28

UCHAIN minus GW Rn.TXT

(j) (i) t= 0.000E+00 1.000E+00 3.000E+00 1.000E+01 3.000E+01 1.000E+02 3.000E+02 1.000E+03
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 Pb-210 Pb-210 1.000E+00 4.986E+00 4.825E+00 4.519E+00 3.593E+00 1.867E+00 1.886E-01 2.700E-04 3.177E-14
 Pb-210 Ra-226 1.000E+00 9.292E-02 2.475E-01 5.356E-01 1.395E+00 2.908E+00 3.786E+00 2.271E+00 3.911E-01
 Pb-210 Th-230 1.000E+00 1.462E-05 8.912E-05 4.299E-04 3.412E-03 2.288E-02 1.332E-01 3.939E-01 6.991E-01
 Pb-210 U-234 1.000E+00 3.497E-11 4.520E-10 4.735E-09 1.111E-07 2.224E-06 4.580E-05 4.040E-04 1.709E-03
 Pb-210 U-238 9.999E-01 2.083E-17 5.523E-16 1.234E-14 8.479E-13 4.995E-11 3.550E-09 9.556E-08 1.152E-06
 Pb-210 äDOSE(j) 5.079E+00 5.073E+00 5.055E+00 4.992E+00 4.797E+00 4.107E+00 2.665E+00 1.092E+00
 0Po-210 Pb-210 1.000E+00 3.154E-01 4.730E-01 4.699E-01 3.742E-01 1.944E-01 1.964E-02 2.811E-05 7.123E-14
 Po-210 Po-210 1.000E+00 1.848E-01 2.919E-02 7.276E-04 1.780E-09 1.650E-25 0.000E+00 0.000E+00 0.000E+00
 Po-210 Ra-226 1.000E+00 4.588E-03 1.787E-02 4.744E-02 1.371E-01 2.951E-01 3.878E-01 2.328E-01 2.691E+00
 Po-210 Th-230 1.000E+00 6.061E-07 5.341E-06 3.368E-05 3.192E-04 2.277E-03 1.355E-02 4.028E-02 3.974E-01
 Po-210 U-234 1.000E+00 1.272E-12 2.367E-11 3.355E-10 9.942E-09 2.177E-07 4.635E-06 4.125E-05 4.421E-03
 Po-210 U-238 9.999E-01 6.805E-19 2.602E-17 8.022E-16 7.276E-14 4.809E-12 3.574E-10 9.741E-09 5.429E-06
 Po-210 äDOSE(j) 5.047E-01 5.201E-01 5.181E-01 5.116E-01 4.917E-01 4.210E-01 2.732E-01 3.093E+00
 0Ra-226 Ra-226 1.000E+00 1.123E+01 1.120E+01 1.113E+01 1.092E+01 1.032E+01 8.481E+00 4.838E+00 6.855E-01
 Ra-226 Th-230 1.000E+00 2.361E-03 7.206E-03 1.688E-02 5.031E-02 1.423E-01 4.262E-01 9.868E-01 1.618E+00
 Ra-226 U-234 1.000E+00 6.945E-09 4.987E-08 2.658E-07 2.360E-06 1.915E-05 1.807E-04 1.097E-03 3.786E-03
 Ra-226 U-238 9.999E-01 4.844E-15 7.498E-14 8.858E-13 2.333E-11 5.462E-10 1.661E-08 2.812E-07 2.439E-06
 Ra-226 äDOSE(j) 1.123E+01 1.120E+01 1.115E+01 1.097E+01 1.046E+01 8.907E+00 5.825E+00 2.307E+00
 0Th-230 Th-230 1.000E+00 8.534E-02 8.534E-02 8.534E-02 8.533E-02 8.531E-02 8.524E-02 8.504E-02 8.434E-02
 Th-230 U-234 1.000E+00 4.048E-07 1.174E-06 2.698E-06 7.951E-06 2.230E-05 6.562E-05 1.457E-04 2.211E-04
 Th-230 U-238 9.999E-01 3.955E-13 2.635E-12 1.357E-11 1.181E-10 9.490E-10 8.834E-09 5.197E-08 1.658E-07
 Th-230 äDOSE(j) 8.534E-02 8.534E-02 8.534E-02 8.534E-02 8.534E-02 8.531E-02 8.519E-02 8.457E-02
 0U-234 U-234 1.000E+00 8.489E-02 8.461E-02 8.405E-02 8.212E-02 7.684E-02 6.090E-02 3.134E-02 4.011E-03
 U-234 U-238 9.999E-01 1.203E-07 3.597E-07 8.338E-07 2.444E-06 6.644E-06 1.735E-05 2.671E-05 1.139E-05
 U-234 äDOSE(j) 8.489E-02 8.461E-02 8.405E-02 8.212E-02 7.684E-02 6.091E-02 3.136E-02 4.022E-03
 0U-238 U-238 5.400E-05 4.119E-06 4.106E-06 4.078E-06 3.985E-06 3.729E-06 2.956E-06 1.522E-06 1.953E-07
 U-238 U-238 9.999E-01 1.656E-01 1.651E-01 1.640E-01 1.602E-01 1.499E-01 1.189E-01 6.119E-02 6.896E-03
 U-238 äDOSE(j) 1.656E-01 1.651E-01 1.640E-01 1.602E-01 1.499E-01 1.189E-01 6.120E-02 6.896E-03
 ||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| ||||| |||||
 THF(i) is the thread fraction of the parent nuclide.

UCHAIN minus GW Rn.TXT

File : C:\RESRAD_FAMILY\RESRAD\USERFILES\NONNUC_UCHAIN.RAD

Individual Nuclide Soil Concentration

Parent Nuclide and Branch Fraction Indicated

0Nuclide Parent	THF(i)	S(j,t), pCi/g
(j) (i)	t= 0.000E+00 1.000E+00 3.000E+00 1.000E+01 3.000E+01 1.000E+02 3.000E+02 1.000E+03	
ÄÄÄÄÄÄÄ ÄÄÄÄÄÄÄ ÄÄÄÄÄÄÄÄÄ ÄÄÄÄÄÄÄÄÄ ÄÄÄÄÄÄÄÄÄ ÄÄÄÄÄÄÄÄÄ ÄÄÄÄÄÄÄÄÄ ÄÄÄÄÄÄÄÄÄ ÄÄÄÄÄÄÄÄÄ ÄÄÄÄÄÄÄÄÄ		
Pb-210 Pb-210	1.000E+00 1.000E+00 9.678E-01 9.064E-01 7.208E-01 3.744E-01 3.783E-02 5.415E-05 6.006E-15	
Pb-210 Ra-226	1.000E+00 0.000E+00 3.054E-02 8.844E-02 2.612E-01 5.656E-01 7.448E-01 4.472E-01 6.270E-02	
Pb-210 Th-230	1.000E+00 0.000E+00 6.654E-06 5.849E-05 5.996E-04 4.348E-03 2.599E-02 7.733E-02 1.357E-01	
Pb-210 U-234	1.000E+00 0.000E+00 2.001E-11 5.299E-10 1.836E-08 4.137E-07 8.880E-06 7.916E-05 3.129E-04	
Pb-210 U-238	9.999E-01 0.000E+00 1.420E-17 1.131E-15 1.317E-13 9.099E-12 6.838E-10 1.869E-08 1.973E-07	
Pb-210 äS(j):	1.000E+00 9.983E-01 9.949E-01 9.825E-01 9.444E-01 8.087E-01 5.247E-01 1.987E-01	
0Po-210 Pb-210	1.000E+00 0.000E+00 8.172E-01 9.107E-01 7.273E-01 3.778E-01 3.818E-02 5.464E-05 6.061E-15	
Po-210 Po-210	1.000E+00 1.000E+00 1.579E-01 3.936E-03 9.628E-09 8.925E-25 0.000E+00 0.000E+00 0.000E+00	
Po-210 Ra-226	1.000E+00 0.000E+00 1.653E-02 7.243E-02 2.470E-01 5.551E-01 7.387E-01 4.439E-01 6.224E-02	
Po-210 Th-230	1.000E+00 0.000E+00 2.715E-06 4.098E-05 5.364E-04 4.179E-03 2.558E-02 7.654E-02 1.345E-01	
Po-210 U-234	1.000E+00 0.000E+00 6.601E-12 3.259E-10 1.561E-08 3.904E-07 8.692E-06 7.823E-05 3.100E-04	
Po-210 U-238	9.999E-01 0.000E+00 3.942E-18 6.214E-16 1.068E-13 8.434E-12 6.656E-10 1.844E-08 1.955E-07	
Po-210 äS(j):	1.000E+00 9.917E-01 9.871E-01 9.748E-01 9.371E-01 8.025E-01 5.206E-01 1.971E-01	
0Ra-226 Ra-226	1.000E+00 1.000E+00 9.972E-01 9.916E-01 9.723E-01 9.192E-01 7.553E-01 4.308E-01 6.039E-02	
Ra-226 Th-230	1.000E+00 0.000E+00 4.326E-04 1.294E-03 4.272E-03 1.246E-02 3.775E-02 8.767E-02 1.438E-01	
Ra-226 U-234	1.000E+00 0.000E+00 1.946E-09 1.744E-08 1.910E-07 1.651E-06 1.593E-05 9.733E-05 3.355E-04	
Ra-226 U-238	9.999E-01 0.000E+00 1.838E-15 4.940E-14 1.799E-12 4.635E-11 1.457E-09 2.491E-08 2.154E-07	
Ra-226 äS(j):	1.000E+00 9.976E-01 9.929E-01 9.766E-01 9.317E-01 7.930E-01 5.186E-01 2.045E-01	
0Th-230 Th-230	1.000E+00 1.000E+00 1.000E+00 1.000E+00 9.999E-01 9.996E-01 9.988E-01 9.965E-01 9.883E-01	
Th-230 U-234	1.000E+00 0.000E+00 8.987E-06 2.687E-05 8.854E-05 2.570E-04 7.655E-04 1.706E-03 2.589E-03	
Th-230 U-238	9.999E-01 0.000E+00 1.273E-11 1.141E-10 1.248E-09 1.075E-08 1.025E-07 6.075E-07 1.941E-06	
Th-230 äS(j):	1.000E+00 1.000E+00 1.000E+00 1.000E+00 9.999E-01 9.996E-01 9.982E-01 9.909E-01	
0U-234 U-234	1.000E+00 1.000E+00 9.967E-01 9.901E-01 9.673E-01 9.051E-01 7.173E-01 3.691E-01 3.608E-02	
U-234 U-238	9.999E-01 0.000E+00 2.825E-06 8.420E-06 2.742E-05 7.698E-05 2.034E-04 3.141E-04 1.024E-04	
U-234 äS(j):	1.000E+00 9.967E-01 9.901E-01 9.674E-01 9.052E-01 7.175E-01 3.695E-01 3.618E-02	
0U-238 U-238	5.400E-05 5.400E-05 5.382E-05 5.346E-05 5.224E-05 4.888E-05 3.875E-05 1.995E-05 1.954E-06	
U-238 U-238	9.999E-01 9.999E-01 9.966E-01 9.900E-01 9.673E-01 9.052E-01 7.175E-01 3.694E-01 3.618E-02	

UCHAIN minus GW Rn.TXT

U-238 α S(j): 1.000E+00 9.967E-01 9.901E-01 9.674E-01 9.052E-01 7.175E-01 3.695E-01 3.618E-02
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THF(i) is the thread fraction of the parent nuclide.

0RESCALC.EXE execution time = 4.69 seconds